

DETAILED ACTION

1. This action is responsive to the amendment filed on June 24, 2009.
2. Claims 11, 13 and 15-30 are pending. Claim 11 is amended. Claims 12 and 14 are cancelled.
3. Claims 11, 15-21 and 30 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiaki Tanaka (Pat. No. US 4,789, 490) in view of Yerina *et al.* (Atomic force microscopy in analysis of rubber materials, Rubber Chemistry and Technology (2003), 76(4), 846-859).
4. Claims 12 and 13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiaki Tanaka (Pat. No. US 4,789, 490) and Yerina *et al.* (Atomic force microscopy in analysis of rubber materials, Rubber Chemistry and Technology (2003), 76(4), 846-859) as applied to claim 11, 15-21 and 30 above, and further in view of Sergeev *et al.* (Pat. No. SU 168825).
5. Claims 22, 23-25, and 29 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiaki Tanaka (Pat. No. US 4,789, 490) and Yerina *et al.* (Atomic force microscopy in analysis of rubber materials, Rubber Chemistry and Technology (2003), 76(4), 846-859) as applied to claim 11, 15-21 and 30 above, and further in view of Hans-Joachim Weippert (Pat. No. US 5,817,256).
6. Claim 27 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiaki Tanaka (Pat. No. US 4,789, 490), Yerina *et al.* (Atomic force microscopy in analysis of rubber materials, Rubber Chemistry and Technology (2003), 76(4), 846-859), and Joachim Weippert (Pat. No. US 5,817,256) as applied to claims 11, 15-21, 22, 23-25, and 29 30 above, and further in view of Sacher *et al.* (Pat. No. US 4, 526, 711).

7. Claim 28 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiaki Tanaka (Pat. No. US 4,789, 490), Yerina *et al.* (Atomic force microscopy in analysis of rubber materials, Rubber Chemistry and Technology (2003), 76(4), 846-859), and Joachim Weippert (Pat. No. US 5,817,256) as applied to claims 11, 15-21, 22, 23-25, and 29 30 above, and further in view of Hirth *et al.* (Pat. No. US 4, 559, 147).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

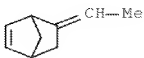
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 11, 15-21 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiaki Tanaka (Pat. No. US 4,789, 490) in view of Yerina *et al.* (Atomic force microscopy in analysis of rubber materials, Rubber Chemistry and Technology (2003), 76(4), 846-859).

Regarding claims 11, 15-21 and 30, Toshiaki Tanaka teaches an immersion oil composition for microscope comprises a liquid dienic polymer, e.g. liquid polybutadiene, as a first component and, as a second component, one or a combination of compounds including (a) chlorinated paraffins, (b) polybutene, (c) carboxylic acid esters, (d) liquid paraffins, (e) saturated aliphatic alcohols and (f) alicyclic alcohols; said composition having a refractive index in the from 1.501 to 1.519 and a Abbe's number in the range from 40 to 46 (Col 1, line 55). The term "polybutene" implied here means homopolymer of 1-butene, trans-2-butene, cis-2-butene or isobutylene, or copolymer of said monomer with other monomer and the polymerization

products of a mixture of said monomers are also included in the copolymer (Col 2, line 42). The first component in the immersion oil composition is a liquid dienic polymer exemplified by liquid polybutadiene, liquid polyisoprene, liquid polychloroprene and the like, of which liquid polybutadiene is particularly preferable. The liquid dienic polymer should preferably have a number-average molecular weight in the range from 500 to 20,000 or, more preferably, from 1,000 to 15,000 (Col 2, line 19) and within said oil composition in an amount of different formulation parts by weight within the instant applications' limitation claims as shown in Table I (Col 5, Col 7, Col 9, and Col 11) corresponding to the instant applicants' limitation claims 11, 16, 17, 18, 19, 20, 21 and 30. Toshiaki Tanaka does not expressly teach a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene.

However, Yerina *et al.* teach the application of atomic force microscopy (AFM) and electric force microscopy (EFM) for compositional mapping of a number of elastomers and related multicomponent materials. Several aspects of optimizing AFM experiments on polymers are discussed. AFM images reveal changes of EPDM morphology caused by crosslinking and by loading with fillers [carbon black (CB) and silica particles] and oil such as bicyclo[2.2.1]hept-2-ene, 5-ethylidene-(polymer with ethene and 1-propene) as shown below. Diffusion of oil from the elastomer component to the matrix is evidenced in the AFM images. Selective distribution of CB in the isotactic polypropylene (iPP) matrix is responsible for the electric conductivity of the thermoplastic vulcanizate corresponding to the instant applicants' limitation claims 11, 14, and 15.



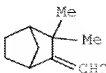
At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an immersion oil composition for microscope by Toshiaki Tanaka so as to include a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornene as taught by Yerina *et al.* with reasonable expectation that this would result in providing resultant mixture that can have properties suitable for an immersion oil for microscope including the dispersive power of light, refractive index, viscosity and other properties..

Thus, It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided an immersion oil composition for microscope by Toshiaki Tanaka with a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornene as taught by Yerina *et al.* in order to the resultant mixture may have properties suitable for an immersion oil for microscope including the dispersive power of light, refractive index, viscosity and other properties. Since it is held that it is ***prima facie*** obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850,205 USPQ 1069, 1072 (CCPA 1980).

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiaki Tanaka (Pat. No. US 4,789, 490) and Yerina *et al.* (Atomic force microscopy in analysis of rubber materials, Rubber Chemistry and Technology (2003), 76(4), 846-859) as applied to claims 11, 15-21 and 30 above, and further in view of Sergeev *et al.* (Pat. No. SU 168825).

Regarding claim 13, Toshiaki Tanaka and Yerina *et al.* teach the features as discussed above. Toshiaki Tanaka and Yerina *et al.* do not teach a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane.

However, Sergeev *et al.* teach an immersion oil such as bicyclo[2.2.1]heptane, 2,2-dimethyl-3-methylene- as shown below for achroapochromatic micro-objectives is based on complex esters and cyclic hydrocarbons with OH and COOH groups. The oil contains abietate and derivatives of terpenes having the general formula I as set forth, where R is the residue of a camphene derivative to increase the viscosity of the oil, terpene derivatives having the general formula II as set forth, where R is the residue of a camphene derivative, are included in the compounds corresponding to the instant applicants' limitation claim 13. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an immersion oil composition for microscope by Toshiaki Tanaka so as to include a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane as taught by Sergeev *et al.* with reasonable expectation that this would result in providing resultant mixture that can have properties suitable for an immersion oil for microscope including the dispersive power of light, refractive index, viscosity and other properties.



Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided an immersion oil composition for microscope by Toshiaki Tanaka with a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane as taught by Sergeev *et al.* in order to that the resultant mixture may have properties suitable for an immersion oil for microscope including the dispersive power of light, refractive index, viscosity and properties.. Since it is held that it is ***prima facie*** obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850,205 USPQ 1069, 1072 (CCPA 1980).

11. Claims 22, 23-25, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiaki Tanaka (Pat. No. US 4,789, 490) and Yerina *et al.* (Atomic force microscopy in analysis of rubber materials, Rubber Chemistry and Technology (2003), 76(4), 846-859) as applied to claim 15, 15-21 and 30 above, and further in view of Hans-Joachim Weippert (Pat. No. US 5,817,256).

Regarding claims 22, 23-25 and 29, Toshiaki Tanaka and Yerina *et al.* teach the features as discussed above, but do not expressly teach the oil composition wherein said aromatic ester is present within said oil composition and further is an ester of phthalic acid.

However, Hans-Joachim Weippert teaches immersion oil for microscopy. The immersion oil includes an ester or ether with tricyclodecane (TCD) structure as a main constituent and one or more high-boiling liquids as minor constituents. The immersion oil is free of halogens and

exhibits a high UV-transmissibility and is characterized by low intrinsic fluorescence because the components utilized can be vacuum distilled (Col 1, line 40). The TCD-methylol esters or di-(TCD-emethylol) esters can be synthesized via esterification of these alcohols with dicarboxylic acids such as phthalic acid, isophthalic acid, terephthalic acid, malonic acid, succinic acid, malic acid, glutaric acid, adipic acid or sebacic acid in accordance with conventional esterification methods (Col 2, line 33). As further components for adjusting the refractive index, butyl benzyl phthalate and/or di-(propyleneglycol-1, 2) dibenzoate can, for example, be added (Col 2, line 44) and wherein said aromatic ether is present within said oil composition and is selected from the group consisting of dibenzyl ether with 11.5 weight % (Col 7, Table II, Example 7) corresponding to the instant applicants' limitation claims 22, 23-25, and 29. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an immersion oil composition for microscope by Toshiaki Tanaka with a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornene by Yerina *et al.* so as to include aromatic ester and ether as taught of Weippert with reasonable expectation that this would result in providing resultant mixture that can have properties suitable for an immersion oil for microscope including the dispersive power of light, refractive index, viscosity and other properties..

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided an immersion oil composition for microscope by Toshiaki Tanaka and a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornene by Yerina *et al.* with aromatic ester and ether as taught of Weippert in order to that the resultant mixture can have properties suitable for an immersion oil for microscope including the dispersive power of light, refractive index, viscosity and other properties.

12. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiaki Tanaka (Pat. No. US 4,789, 490), Yerina *et al.* (Atomic force microscopy in analysis of rubber materials, Rubber Chemistry and Technology (2003), 76(4), 846-859), and Joachim Weippert (Pat. No. US 5,817,256) as applied to claims 11, 14-21, 22, 23-25, and 29-30 above, and further in view of Sacher *et al.* (Pat. No. US 4, 526, 711).

Regarding claim 27, Toshiaki Tanaka, Yerina *et al.* and Joachim Weippert teach the features as discussed above, but do not expressly teach the oil composition, wherein said aromatic ketone is present within said oil composition and is selected from the group consisting of acetophenone, propiophenone, benzophenone and combinations thereof.

However, Sacher *et al.* teach a refractive index fluid for optics and more particularly to such a fluid which can be employed as a coupling adhesive in the optical field (Col. 1, line 6). The recited optical coupling material, further include at least 1% by volume of a substituted 2-hydroxy benzophenone (read on aromatic ketone) being 2-hydroxy-4-iso-octoxybenzophenone to impart a refractive index to the material of 1.688 at 25 °C with a pour point between 20°-30°C (Col. 6, line 10) corresponding to the instant applicants' limitation claim 27. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an immersion oil composition for microscope by Toshiaki Tanaka with a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornene by Yerina *et al.* so as to include aromatic ester and ether by Weippert including substituted 2-hydroxy benzophenone (read on aromatic ketone) as taught by Sacher *et al.* with reasonable expectation that this would result in providing resultant mixture that can have properties suitable for an immersion oil for microscope including the dispersive power of light, refractive index, viscosity and other properties..

Thus, it would have been obvious to one ordinary skill in the art to have substituted 2-hydroxy benzophenone with its homologues like "benzophenone" etc. because characteristics normally possessed by members of homologous series are principally the *same*, and vary but gradually from member to member; chemists knowing properties of one member of series would in general know what to expect in adjacent member, see *In re Henze*, 85 USPQ 261. Since it is held that it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850,205 USPQ 1069, 1072 (CCPA 1980).

13. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiaki Tanaka (Pat. No. US 4,789, 490), Yerina *et al.* (Atomic force microscopy in analysis of rubber materials, Rubber Chemistry and Technology (2003), 76(4), 846-859), and Joachim Weippert (Pat. No. US 5,817,256) as applied to claims 11, 14-21, 22, 23-25, and 29 30 above, and further in view of Hirth *et al.* (Pat. No. US 4, 559, 147).

Regarding claim 28, Toshiaki Tanaka, Yerina *et al.* and Joachim Weippert teach the features as discussed above, but do not expressly teach the oil composition, wherein said aromatic hydrocarbon is present within said oil composition and is selected from the group consisting of triisopropylbenzene and t-butylxylene.

However, Hirth *et al.* teach the use of glycerol 1, 2-carbonates for immersion oils as well as novel immersion oil and its use in optics, especially in fluorescence microscopy (Col. 1, line 5). Hirth *et al.* also teach that the immersion oils are soluble in the majority of customary

organic solvents e.g. chloroform, methylene chloride, diethyl ether, ethanol, benzene, toluene, xylene (reads on aromatic hydrocarbon), petroleum ether and this substantially facilitates the cleaning of the objective and the object carrier (Col. 3, line 23) corresponding to the instant applicants' limitation claim 28. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an immersion oil composition for microscope by Toshiaki Tanaka with a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornene by Yerina *et al.* so as to include aromatic ester and ether by Weippert including substituted xylene with its homologues like t-butylxylene as taught by Hirth *et al.* with reasonable expectation that this would result in providing resultant mixture that can have properties suitable for an immersion oil for microscope including the dispersive power of light, refractive index, viscosity and other properties.

Thus, it would have been obvious to one ordinary skill in the art to have substituted xylene with its homologues like "t-butylxylene" etc. because characteristics normally possessed by members of homologous series are principally the *same*, and vary but gradually from member to member; chemists knowing properties of one member of series would in general know what to expect in adjacent member, see *In re Henze*, 85 USPQ 261. Since it is held that it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850,205 USPQ 1069, 1072 (CCPA 1980).

Allowable Subject Matter

14. Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The most pertinent prior art known by the Examiner is listed in the attached form PTO-1449. Toshiaki Tanaka teaches an immersion oil composition for microscope comprises a liquid dienic polymer, e.g. liquid polybutadiene, as a first component and, as a second component, one or a combination of compounds including (a) chlorinated paraffins, (b) polybutene, (c) carboxylic acid esters, (d) liquid paraffins, (e) saturated aliphatic alcohols and (f) alicyclic alcohols, but fails to teach aromatic alcohol wherein said aromatic alcohol is phenylethanol. Prior art of record, taken alone or in combination, do not suggest or disclose the presently claimed the oil composition, wherein said aromatic alcohol is phenylethanol. Accordingly, the presently claimed invention as defined by claims 26 is allowable with respect to prior art of record.

Response to Arguments

15. Applicant's arguments filed on June 24, 2009 have been fully considered but they are not persuasive.

In response to applicant's arguments that the claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene is fundamentally different from the ethylene propylene diene (EPDM) terpolymer rubber material containing 5-ethylidene- 2-norbornene described in Yerina *et al.* Unlike the claimed tetramerized hydrogenation product of a norbornane and a norbornene

of the present invention, the ethylene propylene diene (EPDM) terpolymer of Yerina *et al.* is a non-hydrogenated rubber material containing three distinct monomer units, namely ethylene, propylene and 5-ethylidene-2-norbornene. Since Yerina *et al.* fail to disclose or suggest a tetramer consisting of four identical hydrogenated monomer units of a norbornane and a norbornene, Yerina *et al.* fail to render obvious the oil composition of the present invention.

The examiner respectfully disagrees. The recited claim an oil composition comprising: a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene; and a liquid diene-based polymer having a number average molecular weight of 300 to 100,000, wherein said liquid diene-based polymer is neither a liquid diene-based polymer of said norbornane, nor a liquid diene-based polymer of said norbornene does not exclude the existence of polymer-norbornene liquid diene-based polymer since "Comprising" leaves the claim open for the inclusion of unspecified ingredients even in major amounts, see *Ex parte Davis et al.*, 80 USPQ 448 (PTO Ed. App. 1948). Also, the broad "comprising" and "containing" terminology do not exclude the presence of other ingredients in the composition, unlike the narrow "consisting of" language, see *Swain v. Crittendon*, 332 F 2d 820, 14 1 USPQ 8 11 (CCPA 1964).

In response to applicant's arguments that the claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene is fundamentally different from the camphene derivatives of o-cresol and methoxyphenol described in Sergeev. Unlike the claimed tetramerized hydrogenation product of a norbornane and a norbornene of the present invention, the camphene derivatives of o-cresol and methoxyphenol described in Sergeev are non-tetramerized compounds having a fundamentally different structural formula from the claimed hydrogenation product of a monomer

to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene of the present invention.

The Examiner respectfully disagrees with the above arguments because the arguments of counsel cannot take the place of evidence in the record, see *in re Schulze*, 346 F.2d 600,602, 145 USPQ 716,718 (CCPA 1965). See also MPEP 716.01(c). Sergeev *et al.* teach an immersion oil such as bicyclo[2.2.1]heptane, 2,2-dimethyl-3-methylene- as shown below for achroapochromatic micro-objectives is based on complex esters and cyclic hydrocarbons with OH and COOH groups. The oil contains abietate and derivatives of terpenes having the general formula I as set forth, where R is the residue of a camphene derivative to increase the viscosity of the oil, terpene derivatives having the general formula II as set forth, where R is the residue of a camphene derivative, are included in the compounds corresponding to the instant applicants' limitation claim. It is noted that rationale different from applicant is permissible. The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant, *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon*, 91 9 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990) *cert. denied*, 500 U.S. 904 (1991). Also, while there must be motivation to make the claimed invention, there is no requirement that the prior art provide the same reason as the applicant to make the claimed invention, *Ex parte Levengood*, 28 USPQ2d 1300,1302 (Bd. Pat. App. & Inter. 1993).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re*

Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir.1986). The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify an immersion oil composition for microscope by Toshiaki Tanaka so as to include a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornene as taught by Yerina *et al.* with reasonable expectation that this would result in providing resultant mixture that can have properties suitable for an immersion oil for microscope including the dispersive power of light, refractive index, viscosity and other properties.

16. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Examiner Information

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bijan Ahvazi, Ph.D. whose telephone number is (571)270-3449. The examiner can normally be reached on M-F 8:0-5:0. (Off every other Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Y. Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BA/
Bijan Ahvazi,
Examiner
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/Harold Y Pyon/
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10/15/2009